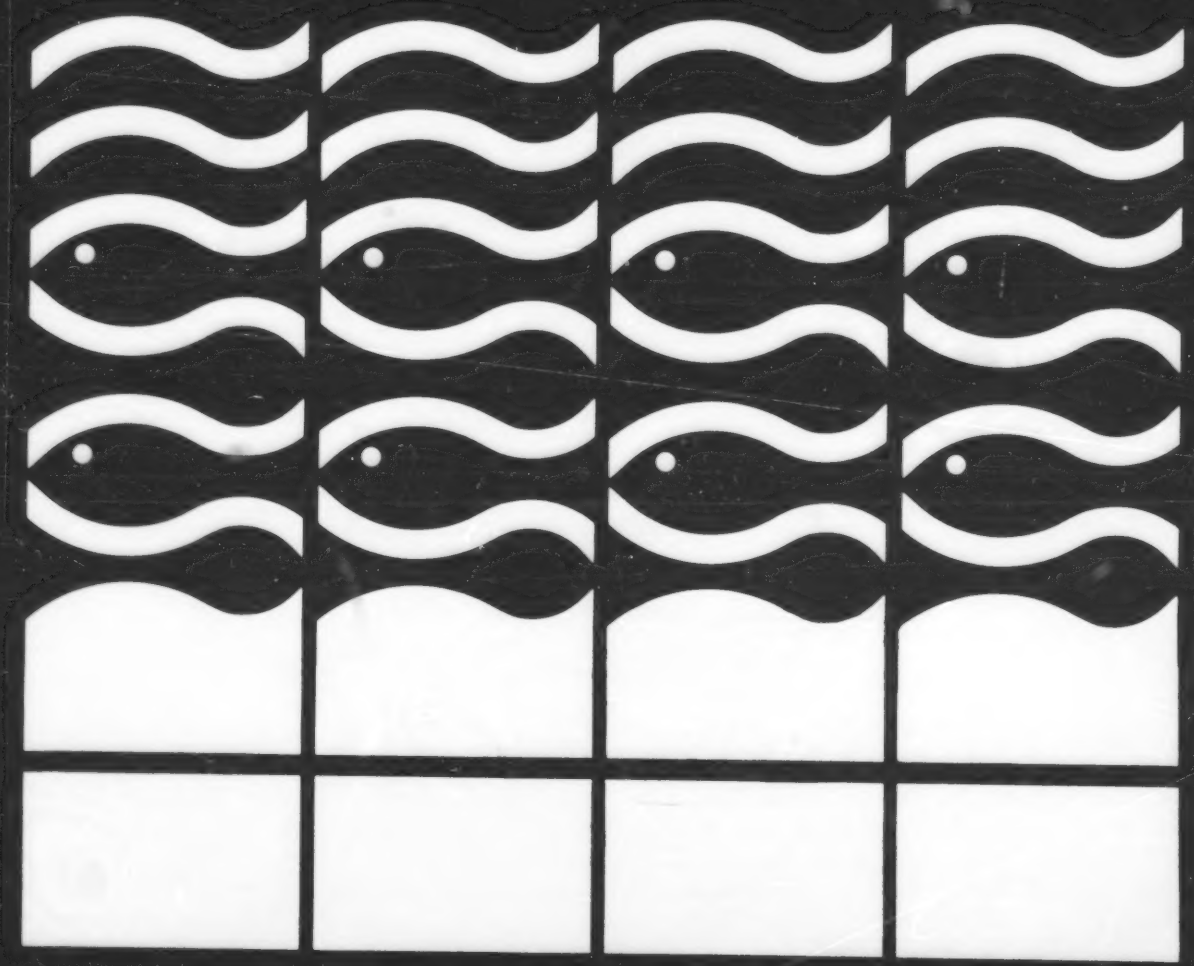
Fishing Industry Advisory Board

Market Report



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THE FISHING INDUSTRY AND FISH DISTRIBUTION IN POLAND

Prepared for

FISHING INDUSTRY ADVISORY BOARD
St. John's Newfoundland

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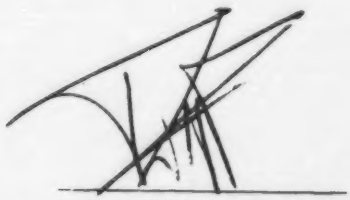
FOREWORD

The anticipated regeneration of fish stocks which are accessible to Newfoundland fishermen, and our increasing capability and capacity to harvest and process the available marine resources, make it necessary to identify new, additional markets and to assess their potential size and their consumption patterns.

In view of the fact that relatively little has been done to review market conditions and prospects in the centrally planned economies of Eastern Europe, and recognizing that access to data and firsthand knowledge of conditions are most desirable for such a study, the Fishing Industry Advisory Board contracted with the Polish Sea Fisheries Institute in Gdynia and Rybex to provide an overview of the fishing industry as well as existing and projected market potential for fish and fish products in Poland to 1985.

This report is the result, and we believe it is a very good description of the fish business in Poland. Opinions expressed and conclusions reached by the authors are not necessarily endorsed by the Fishing Industry Advisory Board.

It is hoped that the information provided will aid those who export fish and who will need to find additional markets.



FRANK DOPPLINGER,
Chairman.

MARCH 31, 1980

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1. OUTLINE OF POLISH SEA-FISHERY

1.1. Organization and Property Relations in Fishery

Prior to the Second World War, most of Poland's catches of salt-water fish were from the Baltic. Sea-fishery was represented exclusively by the private sector, which also imported substantial quantities of fish, mainly from Holland and Great Britain.

It was impossible to keep either landings or imports of fish at a steady level. The highest landings 23,336 tons were recorded in 1936, 18,276 tons from the Baltic and 5,060 tons from the North Sea. In 1958, the total catches dropped to 12,510 tons.

The highest imports of fish were recorded in 1929. These amounted to 101,612 tons, of which 83,445 tons were salted herring. In 1938, Poland's imports of fish dropped to 67,149 tons, 54,827 tons of this being salted herring.

The average annual fish consumption measured in product weight for the years 1920 - 1938 amounted to 2.34 kg per capita, 1.85 kg of this being salted herring.

Following state investments in the building of the fishing fleet after the Second World War, its property structure changed. Landings of salt-water fish increased steadily, first from the North Sea, then from various regions of the Atlantic and Pacific Oceans.

Fish consumption increased to about 7.2 kg per capita product weight, i.e. about 22 kg live weight. The composition of fish consumption and the sources of supply changed substantially.

The majority of fish supplies came from domestic fishing, but imports, although on an upward trend, were of lesser importance.

Further, more accurate data regarding the structure of market supplies and imports are given in the following part of this study. The outline of the profile of Polish fisheries in the 'seventies, covers the following data: the structure of the sea-fishing fleet, the volume of landings and the role of fisheries in Poland's food consumption.

1.2 Fishing Fleet

The Polish fishing fleet of the 'seventies embraced three basic sectors:

- deep-sea fishing fleet, consisting mainly of fishing and factory trawlers operating in distant waters ranging from 1,500 to 9,000 Nm from their home ports;
- auxiliary vessels, i.e. mother-ships, fish carriers and refrigerated ships for the transport of fish and products picked up from the catchers in the fishing grounds;
- small-trawler Baltic fishing fleet owned by state enterprises, fishery co-operatives and private fishermen.

There are also about 600 small fishing boats working in the Southern Baltic.

Due to the steady improvement of the fishing fleet as from 1970, the number of vessels diminished over the nine years with the exception of auxiliary vessels, but the tonnage in GRT increased, as did the power of main engines in HP. All in all, the catch potential of the fleet, the processing throughput at sea and the hold capacity have increased substantially.

Table I gives the composition of Poland's fishing fleet from 1970 and 1979:

TABLE I

COMPOSITION OF POLAND'S FISHING FLEET

FROM 1970 to 1979

No.	Type of Vessels	Number of Ships		Tonnage in thousands of GRT		Power of main engines HP in thousands	
		1970	1979	1970	1979	1970	1979
1	Deep-sea fishing vessels (factory trawlers)	149	117	182.5	233.1	201.3	299.3
2	Auxiliary vessels	4	9	39.2	69.0	24.8	71.1
3	Small trawlers	545	456	25.8	30.6	73.8	109.4
4	Total:	698	582	247.5	339.1	300.1	479.8

More detailed figures concerning the composition of the fleet from 1970 to 1979 as regards types of vessels and property sector are given in Appendices Nos. 1 and 2.

1.3 Catch Composition

During the past nine years, important changes have taken place in the composition of catches by the Polish fleet, general data being given in Table 2.

TABLE 2

CATCHES OF THE MOST IMPORTANT SPECIES OF SALT-WATER FISH IN THE YEARS 1970 TO 1979, IN LIVE WEIGHT, METRIC TONS

Species	1970	1975	1979
Brackish-water fish	3,372	5,375	4,206
Eel	418	276	271
Salmon	70	88	87
Halibut	29,394	13,164	5,759
Flatfish	8,480	10,455	9,108
Cod	126,218	97,451	69,325
Ocean Perch	11,172	26,104	3,807
Jack Mackerel	9,303	40,629	157,103
Herring	129,216	118,899	63,850
Sprats	20,171	71,958	28,574
Mackerel	76,593	100,652	11,294
Blue Whiting	-	4,704	19,923
Hake	54	133,853	108,554
Antarctic Fish	-	-	69,141
Pilchard	-	79,824	2,633
Miscellaneous	37,831	113,256	102,245
T o t a l:	451,292	816,688	655,880

In the nine years cod and herring landings dropped by half, those of mackerel even more.

The shortfall of cod was more than covered by hake landings.

Catches of jack-mackerel increased many times and completely new species of Antarctic fish appeared on the Polish market. More detailed data for particular years are presented in Appendices 3 to 10.

The changes in the species composition of catches resulted primarily from changes in the deployment of the Polish fishing fleet. Due to the enforcing of catch-quotas by different Fishery Regulatory Bodies of which Poland is a member, and the introduction of Fishery Economic Zones (FEZ) by most countries, Polish fishing vessels had to change the traditional fishing grounds of the 'sixties and beginning of the 'seventies. Fishing was either taken up in new regions of the open seas outside FEZ (e.g. the Antarctic), or in those to which access was granted on the basis of co-operative agreements.

1.4 Fishing Regions

Differences in the extent of exploitation of the particular regions in 1978 as compared with 1970, are given in Table 3.

As can be seen, fishing in 1978 expanded considerably as compared with 1970. In 1978, most catches were taken from eight new regions as against the four traditional regions exploited in 1970. Landings from the North-East Atlantic declined by half. The most drastic drop in catches was from the ICNAF region, from 216,354 tons in 1970 to 18,126 tons in 1978.

TABLE 3

POLISH CATCHES IN PARTICULAR REGIONS

IN 1970 AND 1978, IN METRIC TONS

No	Name of Region	Statistic Region according to FAO	1970 Catches		1978 Catches	
			In Metric Tons	In Percent	In Metric Tons	In Percent
1	Baltic	27	146,647	32.5	174,520	26.6
2	North-East Atlantic	27	57,010	12.6	29,519	4.5
3	North-West Atlantic	21	216,354	48.0	18,126	2.8
4	Central-East Atlantic	34	31,281	6.9	49,302	7.5
5	South-East Atlantic	47	-	-	164,139	25.0
6	Antarctic Atlantic	48	-	-	69,891	10.7
7	Indian Ocean, Antarctic	58	-	-	316	-
8	Pacific Antarctic	88	-	-	59	-
9	South-West Atlantic	41	-	-	21,035	3.2
10	North-East Pacific	67	-	-	29,372	4.5
11	South-East Pacific	87	-	-	94,366	14.4
12	Central-West Pacific	71	-	-	5,235	0.8
	T o t a l:	-	451,292	100	655,880	100

Polish catches in the ICNAF region, i.e. the Canadian Fishery Economic Zone (Newfoundland) increased to 207,106 tons by 1972, then

dropped to 187,647 tons in 1975, the sudden withdrawal of most of the Polish fishing vessels from this region taking place in 1977, when only 49,250 tons of fish were landed. In 1979, a further decline in landings took place, as mentioned.

Detailed data of the changes taking place in the distribution of catches in each consecutive year with the data as to species extracted are given in appendices Nos. 3 to 8.

1.5 The Role of Fishery in Poland's National Economy

Sea-fishery in Poland was backed by the government mainly due to the fact that the cost of producing 1 kg of fish protein was less than that of animal protein derived from domestic agriculture, and the production cycle was shorter. Such Economic Evolution in terms of the National Economy was applied as from the end of 1950's, when the nutritional demands in terms of energy consumption and protein demands were fully satisfied, the only problem being to increase the share of animal protein.

The nutritional model of the 1970's outlined by the government, envisaged the consumption of about 85 grammes of animal protein.

This was achieved in principle, and in 1978 the average annual consumption of the main protein foods in edible weight per capita, was as follows:

- meat and meat products	70.6 kg
(of which pork)	(36.4 kg)
- fish and fish products	7.3 kg.
(of which salt-water fish)	(6.3 kg)
- edible fats	24.9 kg
(of which butter)	(8.8 kg)
- dairy milk	261 litres
- eggs	218

The role of fishery in Poland's food economy is qualified according to its share in the protein consumption. It supplies 3.2 per cent of the total protein consumption in Poland, and 7 per cent of the consumption of animal protein. Discussions are continuing among nutritionists as to whether this is the optimum amount, although the volume of fish consumption is and will be determined by various economic factors, especially the potential market demand.

As regards the share of the value of fishery production in relation to the Net Domestic Product (NDP) in Poland, it amounted to about 0.4 per cent in 1978.

On the other hand, in relation to the value added of Polish agriculture, the value of fishery products in 1978 was slightly less than 3 per cent.

In the 1980's, growth rate of Poland's agriculture will probably be slightly higher than that of the sea-fishery. In view of this, a certain (probably insignificant) decline in the role of fishery in Poland's economy can be expected.

2. FISH CONSUMPTION AND TRADE IN POLAND IN THE YEARS 1970 - 1979.

2.1 Fish Processing

In Poland the fish processing industry falls into two categories:

1) fish processing plants

2) canning factories

Pre-treatment of fish i.e. gutting, heading, filleting and salting of fish, is carried out at sea and ashore.

On board the deep-sea fishing vessels at sea, the fish

caught, undergoes pre-treatment by eviscerating, filleting and/or salting. Fish-waste from the processing and by-catch are reduced to fish-meal and fish-oil.

Reduction to fish-meal and oil constitutes the processing of by-products.

Pre-treatment on the small Baltic trawlers consists in the manual gutting and heading of the fish caught (mainly cod).

Both pre-treatment and processing proper are carried out ashore after landing the fish.

The pre-treatment of fresh and frozen fish is carried out in fish processing plants belonging to the fishery enterprises which are situated on the unloading quays in fishing harbours. Fish processing is also handled by the fish wholesalers(e.g. "Centrala Rybna"). The "Zaklady Rybne" and "Centrala Rybna" plants are usually situated some distance away from the fishing harbour, often far inland.

Pre-treated fish unloaded from ships undergoes further processing ashore, as are salted and frozen whole fish.

After salting at sea, the fish is repacked into retail-size barrels, to which seasoning and brine are added. Wet herring landed from the Baltic is salted ashore.

The canning of fish is carried out in special plants attached to either fishery enterprises or "Zaklady Rybne". Processing embraces smoking, pickling, canning and the production of convenience food.

"Centrala Rybna" is the main supplier of smoked, pickled or ready-to-serve fish dishes for the domestic market. "Zaklady Rybne", in turn, produce canned fish, the quantity of

which increased from 29,[illegible] tons in 1970 to 47,927 tons in 1978. Most canned fish is produced by state-owned plants. Fish processing co-operatives supply about 7 per cent of the smoked fish, about 18 per cent of the pickled fish and about 21 per cent of the canned fish for the domestic market.

In 1978, canned fish as such constituted 18.8 per cent of the final output of Polish fishing industry destined for human consumption; salted fish - 9.2 per cent, fillets - 8.2 per cent, fresh and frozen salt-water fish 34.4 per cent, this including 9.6 per cent fresh-water fish. The production of smoked fish has proved to be more stable within the last 9 years, amounting to 12.3 per cent of total output. More details in this respect for a period from 1970 to 1978 are given in Appendix 11.

2.2 Cold Storage of Fish

Following investments in the fishing fleet and the fish processing plants, the chain of cold-storage plants was extended. Although the cold storage chain does not reach all the small towns and villages, it serves its purpose where fish is sold on a large scale.

The cold-storage chain includes the following:

1. Special low-temperature refrigeration plants in which to store frozen products for longer periods of time. These refrigeration plants are situated in the deep-sea fishing ports of Gdynia, Szczecin and Swinoujacie, and also the small Baltic ports along the whole of the coast. Wholesalers and processing plants have smaller plants of this type.

2. Fresh fish chilled on ice, e.g. fish or semi-products, and recently also salted Baltic herring are stored in zero temperature cold storage plants and separate chambers, in harbour refrigeration plants.

3. Fish cold-storage plants further inland.

4. Multipurpose cold-storage plants throughout the country, affording, if necessary, space for the storage of fish and fish products.

5. Plants producing ice in blocks or in the form of flakes etc.

6. Reefer vans in trade transport.
(In Poland, the fish industry seldom uses railway reefer trucks owing to difficulties in supplying them with dry ice.)

7. Cabinet type freezers located in retail shops.

The cold storage capacity of state-owned fishery enterprises situated in deep-sea fishing or Baltic ports increased considerably in the years 1970-1978 (in thousands of tons) as shown below:

	1970	1978
T o t a l	22.1	34.8
of which:		
in deep sea fishing ports	19.3	30.8
in small-trawler ports	2.8	4.0

As the fish cold-storage potential in Poland is insufficient to needs, large scale measures are to be undertaken.

It has been planned to increased the storage capacity of low temperature refrigeration plants in 1980-1985 as follows:

up to 35.4 thousand tons in 1980, and
up to 70.8 thousand tons in 1985,

of this, in deep-sea fishing ports:

up to 31.0 thousand tons in 1980, and
up to 65.0 thousand tons in 1985,

in the small-trawler ports:

up to 4.4 thousand tons in 1980, and
up to 5.8 thousand tons in 1985.

The storage capacity of about 1.0 thousand tons in zero temperature chambers in 1970, and 1.8 thousand tons in 1978, is to increase to 2.5 thousand tons in 1985.

The production of ice has increased from about 380 tons per day in 1970, to about 530 tons.

The single storage capacity in low temperature chambers is planned at (in thousands of tons):

	1980	1985
in the wholesale trade	7.2	9.8
in processing plants	2.4	3.0

The expansion of the existing cold storage capacity should enable coordination of seasonal fish landing and market supplies.

The largest cold storage potential of Polish fisheries is naturally on the coast. Poland is a relatively small

country - less than 600 km from north to south, and the longest communication route - from north-west to south-east- less than 900 km. There is therefore no need to build up stocks of frozen fish inland, as it would only take at the most 11 to 19 hours to deliver it to the farthest destination. It was thus decided to concentrate cold storage of fish and fish products in the deep-sea fishing ports, as this affords several advantages, namely:

- each ship, and in case of congestion, even several ships, can be unloaded immediately on arrival at the port, thus seaborne and inland transport do not have to be correlated;
- the cost of building only a few large cold storage plants is less than that needed to build a large number of small plants with the same combined storage capacity distributed throughout the country;
- transport of fish products inland is based on orders submitted, which eliminates unnecessary carriage;
- it is possible to organize fairly good regularity of overland transport and full use of transport means;
- in cases of seasonal surpluses of fish seaborne exports are facilitated;
- in large refrigeration plants it is easier to maintain low temperatures, i.e. -27°C and even -30°C.

As the general concept of the chain of low-temperature cold storage plants is to locate them in fishing ports, the capacity of refrigeration plants inland can be

reduced.

In general, the accepted principle has been to build cold storage plants with a capacity sufficient to cover two week's demand at peak seasonal sales if there is a processing plant in the vicinity plus two weeks' reserve stock.

This was considered sufficient to maintain regular supplies of fish products and make good use of long-distance reefer transport means.

Apart from cold storage plants in such consumer centres as large towns, there are also cold storage chambers in the so-called semi-wholesale stores. There are not many and can store up to a dozen or so tons. These cold storage bases facilitate transloading of fish from the reefer vans to smaller vans delivering fish to retail shops. There are several score such stores in Poland, either in large retail shops, or as independent warehouses.

Poland has a relatively well-developed railway system, therefore there are practical facilities for reaching all outlet centres. In practice, however, only about 50 per cent of fish products is carried by rail owing to the shortage of dry ice, the distribution of which does not cover the whole country. Rail transportation is thus limited to some main routes only, the remaining fish being carried by road.

Three types of vans are used: "Volvo" with a loading capacity of 20 tons, "Skoda" and "Jelcz" - each with a capacity of 12 tons.

Reefer containers are not used. Loading and unloading of vehicles is by means of roller pallets. All road trans-

portation vehicles which have their own servicing bases in the deep-sea (Szczecin, Gdynia), and smaller bases in fishing ports belong to "Transocean". Railway trucks are the property of the Polish State Railways ("RKP"), and can be hired if need be.

"Transocean" vans and the railway trucks transport goods from the ports to regional wholesalers and, in some cases, local cold storage plants.

Transport from the regional wholesalers or local centres to retail shops is by 3 - and 5 - ton reefer lorries or small vans. These vans have their own reefer or isothermal systems and are the property of "Centrala Rybna". They have their own bases.

2.3 Fish Supplies for the Domestic Market from Domestic Production and Imports.

A detailed list of supplies for the domestic market from home production and imports in the years 1970 to 1978 are given in Appendix No. 12.

The supply of fish products for the domestic market comes mainly from the state sector, with some from fishing co-operatives and private fishermen. Shortages are made up by imports.

The composition of and changes in supplies in the period 1970 - 1978 of fish products are given in Table 4.

TABLE 4.

QUANTITATIVE AND QUALITATIVE CHANGES IN SUPPLIES FOR THE DOMESTIC MARKET

Groups of Products	1970		1978		1970 = 100
	Thousands of tons	Compos. per cent	Thousands of tons	Compos. per cent	
Fish-total	187.9	100.0	239.6	100.0	127.5
of which salt-water fish, fresh and frozen	43.3	23.1	60.9	25.4	140.6
Fresh-water fish	15.9	8.5	23.0	9.7	144.6
Salted fish	37.2	19.8	25.8	10.8	69.4
Fillets	16.9	9.0	15.9	6.6	94.1
Smoked fish	29.4	15.6	31.7	13.2	107.8
Canned fish	25.8	13.7	48.7	20.3	188.0
Pickled fish and ready-to-serve foods	19.4	10.3	33.6	14.0	173.2

The drop in consumption of salted fish mainly concerned salted herring that in fish fillets resulted from decreased catches of raw material.

The following changes took place in imports of fish and products destined for both the domestic market and processing:

TABLE 5

CHANGES IN IMPORTS OF FISH PRODUCTS

(IN THOUSANDS OF TONS)

FOR PROCESSING AND THE DOMESTIC MARKET

Groups of Products	1970	1971	1972	1973	1974	1975	1976	1977	1978
Salt-water fish fresh and frozen	6.2	3.4	5.6	12.1	19.0	28.1	24.1	22.0	40.5
Salted fish	4.0	7.2	12.7	13.4	13.1	15.9	12.8	7.2	3.5
Canned fish	4.4	2.8	3.3	2.9	4.2	8.5	4.9	2.9	1.4
Fillets	-	-	-	-	-	2.0	3.4	7.6	5.7
Dressed fish	-	-	-	-	-	-	7.3	11.6	22.2
Total imports:	14.6	13.4	21.6	28.4	36.3	54.5	52.5	51.9	73.7

Imports for human consumption were five times higher in 1978 than in 1970, the types of products being salted, canned and filleted fish. Imported fish was for the market and processing.

Seasonal Fluctuations

Irregularity of fish landings, as well as seasonal fluctuations in the demand for fish and products necessitate the maintaining of reserves.

Seasonal fluctuations include increased supplies due to

the traditional higher consumption of fish in the colder months, particularly at Christmas (carp, herring). In the summer and autumn months, when the demand drops, surpluses from landings and processing are stored to cover the later increases.

Broken down into quarters, the mean annual supply of fish and products for human consumption of the market is as follows:

first quarter - 28.4 per cent;

second quarter - 20.3 per cent;

third quarter - 17 per cent;

fourth quarter - 34.3 per cent.

The country's cold storage network permits the accumulating and storage of fish to cover the demands of the market and processing plants.

The landings from deep-sea vessels and small Baltic trawlers and requiring cold storage in particular months are shown in table 6.

TABLE 6

LANDINGS IN FISHING PORTS DESTINED

TO COLD STORES IN 1978

(IN THOUSANDS OF TONS)

Months	Deep-sea fishing ports	Baltic fishing ports	T o t a l
January	7.0	6.8	13.8
February	4.8	11.1	15.9
March	14.1	17.6	31.7
April	16.0	20.9	36.9
May	12.8	14.7	27.5
June	10.7	11.6	22.3
July	9.9	13.7	23.6
August	10.7	10.3	21.0
September	7.7	6.8	14.5
October	12.3	9.5	21.8
November	13.9	5.5	19.4
December	11.5	7.2	18.7
T o t a l	131.4	135.7	267.1

2.4 The volume of Polish exports and imports is shown in appendices Nos. 14 and 15. The drop in exports resulted from catch restrictions applied in foreign fishing zones. Of the 35 countries importing fish from Poland, the most important are:

Nigeria

The Ivory Coast

Spain

Denmark

and of the Socialist Countries:

- The Soviet Union
- Hungary and
- Czechoslovakia

As can be seen, imports of fish have increased. The biggest item in imports is fish-meal. Poland imports fish from a dozen or so countries. The most important partners are:

- Peru (78 thousand tons)
- Denmark
- Great Britain
- Canada
- Ireland
- The U.S.A. and France

2.5 Fish Consumption

The consumption of fish increased from 4.5 kg per capita in 1960 to 6.3 kg in 1970, and 7.7 kg in 1976. Since then, it has become more or less stabilised with a slight drop in some years, for example, in 1978 it fell to 7.3 kg. According to rough calculations, the consumption in 1979 amounted to 7.6 kg, and in 1980 it may reach the level of 7.8 kg or even 8.0 per capita.

Since 1977, there has been a slight drop in consumption caused by difficulties in gaining access to the fishing grounds on the shelves.

The consumption of fillets, canned and smoked fish in

1970 - 1978 was as follows: (1970 = 100)

Years	1970	1971	1972	1973	1974	1975	1976	1977	1978
Fillets per cent	100	80	100	100	140	160	140	120	100
Canned fish per cent	100	82	91	109	118	118	136	136	127
Smoked Fish per cent	100	111	122	133	133	111	122	111	100

The consumption in the remaining assortment varied. More detailed information in this respect is given in Appendix No. 13.

The rough figures for declining consumption of salted fish (mainly herring) that was originally caught in the North Sea, likewise in the North-West Atlantic illustrates the consequences of dwindling access of Polish vessels to some fishing grounds.

In particular, the consumption of salted fish per capita expressed in indices (1970 = 100) is as follows:

Years	1970	1971	1972	1973	1974	1975	1976	1977	1978
per cent	100	100	100	91	91	91	91	82	64

The annual consumption of fish broken down into monthly figures in recent years was as follows (expressed as percentage of annual consumption):

Months	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
per cent	7.6	9.1	10.9	7.5	6.8	6.3	5.9	7.3	8.1	7.7	8.4	14.4

2.6 Packing

Two kinds of material are used for packing fresh fish:

- thick-walled wooden boxes;
- polyethylene containers.

It is planned to substitute wooden boxes with polyethylene containers in the near future.

Salted fish are also packed in wooden barrels, only a small number of polyethylene barrels being used.

The fish frozen on board ship is packed in 765 x 255 x 190 (or 200) mm. boxes of corrugated board.

Fillets for export to West-European markets are packed in 500 x 265 x 260 mm. boxes of imported cardboard only. Cardboard boxes must be strengthened with tape. So far, high quality strong, damp-resistant Scotch tape has been imported for this purpose.

95 per cent of the canned fish is packed in Poland produced tins made of tinplates, 8 per cent of which are lithographed. The dimensions of the tins are as follows:

Tins composed of three pieces (body, end and lid)

102 x 47 mm.	-	300 gram
74 x 48 mm.	-	170 gram
103 x 119 mm.	-	800 gram (for canteen use)

Tins composed of 2 pieces (body and lid)

102 x 26 mm.	-	150 gram
102 x 38 mm.	-	260 gram
76 x 25 mm.	-	80 gram
76 x 28 mm.	-	100 gram
76 x 18 mm.	-	50 gram

" Hansa - Type - Tins"

151 x 83 x 25 mm. - 200 gram
151 x 83 x 27 mm. - 215 gram
151 x 83 x 32 mm. - 260 gram

Other types:

108 x 63 x 28 mm. - 125 gram
108 x 79 x 20 mm. - 100 gram
116 x 78 x 24 mm. - 160 gram (imports from East Germany)

As can be seen from the above, there are many kinds of tins in use, tendency now being to limit these to 8-10 types altogether.

Canned fish is packed into cardboard boxes, the sizes of which correspond to those of the tins as follows:

488 x 258 x 245 mm.
415 x 302 x 185 mm.
412 x 302 x 155 (or 200) mm.
410 x 306 x 215 (or 193) mm.

The aim is to eliminate cardboard boxes for packing tins, and substitute them with the thermocontracting foil. Pickled fish are mainly packed in 0.2 to 0.9 litre glass jars. It is planned to limit the number to three basic sizes, namely - 0.25, 0.5 and 0.9 litre. Most popular with the consumers are 0.34 litre jars, which is being taken into consideration. Typical pickled fish jars are those with "twist" lids, 82 mm diameter. Pickled fish are still produced in big glasses and tins of 5 - 6 litres.

Smoked fish are packed in thin-walled wooden boxes, which are considered the best. Apart from this, in local sales "Centrala Rybna" sometimes uses carboard boxes strengthened with corrugated carboard and

wire containers.

There are very many types of packing used for ready-to-serve dishes, depending upon the type of product.

Frozen fish portions, salted and smoked fish are vacuum-packed in foil. At this moment, this kind of packing is not widely used, but it will be developed in the near future.

Fillet portions in breadcrumbs, croquettes and fish dumplings (ravoli) are mechanically packed in different ways.

Salads and fish paste are delivered to "Centrala Rybna" retail shops on dishes and are sold by weight.

Delicatessen fish paste is packed in aluminum tubes.

2.7 Prices of Fish Products*

System of prices and subsidies

Apart from some kinds of prices which are less important to the market and are applied for internal calculations between state companies, the following prices are applied in the the Polish fish industry:

Retail prices
Wholesale prices
Producer's prices

Retail prices are of basic importance, being fixed to suit the social requirements and purchasing power of the population (family income). At present wholesale and producer's prices are based on these.

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* At the time of this Report, one Canadian dollar was valued at approximately 30 - Zloties.

Retail prices of fish in Poland have been established at a relatively low level. This results from the government's policy to supply as much fish as possible to the domestic market. It does not apply to certain luxury articles such as salmon or eel and imported processed fish of higher quality which are sold in special shops run by "Rybex", foreign trade enterprise, and the prices of which have been fixed at a higher level than those of fish processed in Poland.

Wholesale prices are based on retail price less the retail profit margins. They are for calculations with authorized wholesale buyers such as state and co-operative trade centres, state and privately owned catering establishments.

"Centrala Rybna" also applies wholesale prices for supplies of fresh-water fish for fish-processing companies.

Producer's prices are which the producers i.e. fishing or fish-processing companies charge for fish. These prices are also applied in calculations between state and co-operative companies for deliveries f.o.b. rail-car to the destination station.

Producer's prices are based on wholesale prices less wholesale profit margins, but retail prices are always the starting point for the other two prices.

As retail prices are relatively low, producer's prices based upon these do not quite cover the costs of production. As far as frozen, salted fish and fillets are concerned, the current producer's price may cover only half the costs borne by fishing and fish-processing.

In view of this, fish processing companies are subsidized from the national budget. The subsidies are as to offset the difference between the so determined production cost and its sales-value based

upon the producer's price lists and to ensure the required profit.

The subsidies are determined on the basis of an index calculated every year also depending on the existing conditions in fishery, but mainly the prices of materials, services and fixed assets, all of which increased the companies' expenditures noticeably in recent years.

The subsidies are mainly directed to fishing companies as the production cost of canned fish and ready-to-serve dishes does not exceed their value in most cases. Retail prices for fresh fish are not differentiated according to quality standards. The producer is responsible for supplying fish of the highest quality. Producers' prices have been differentiated as follows:

- Producers' price for grade II products amounts to 80 percent of that for top quality;
- Producers' price for grade III products amounts to 60 percent of that for top quality.

The idea of applying these differentiated prices was to force the producers(meaning fishing companies) to land fish as fresh as possible.

For some kinds of fish, namely -shad, round or dressed mackerel and round herring, the zonal and regional prices are in force. These, however, concern only wholesale and retail prices.

Regional prices are seasonal in the coastal regions, but related to distance in other zones. In the third zone which is farthest away from the coast, wholesale and retail prices are slightly higher than in the two others as well as in coastal regions.

Example (in local currency - zloties)

	Wholesale Price	Retail Price
Round frozen mackerel:		
1st. zone	6.70	10.00
2nd. zone	7.70	11.00
3rd. zone	8.80	12.00
Baltic herring:		
1st. zone	8.70	12.00
2nd. zone	11.70	15.00
3rd. zone	12.70	16.00

Retail prices

As far as the Polish fish market is concerned, data as to prices are only temporary as most probably fish prices will have to be adjusted. Apart from the substantial increase in the costs of fishing and fish-processing, the growing differences between costs and prices of fish mean that the relations between prices of fish products are slightly out of proportion.

This results from the following:

a) The government's policy for many years has been to maintain relatively low prices for all staple food products, hence prices were frozen for some fish products. Prices of several fish products, in particular luxury goods changed, this resulting in scme disparities in prices of certain fish

products. For example, good quality dressed Baltic cod has been priced at 10.-zloties, trout at 110. - zloties.

b) The fish price freeze with simultaneous operating cost increases in fishery, fish-processing and transport services resulted in companies pressing for higher prices for new assortments. Hence e.g. prices for new Antarctic species, new assortments of canned fish and ready-to-serve fish dishes are relatively high. Price of headed and gutted mackerel fixed much earlier at 16-18 zloties or headed halibut at 18 zloties cannot be compared to prices of Notothenia or Kergulena (Antarctic species) are 42 and 50 zloties respectively. The said Antarctic species though much more expensive than cod are easily sold, thus illustrating the high demand for fish in Poland, irrespective of price. There are similar differences in the case of some tinned fish.

This state of affairs should not last long, frequent opinion being voiced as to the need for adjustments in fish prices in Poland.

The following gives the retail prices of some important species and assortments of wet and frozen fish (an index of 1.0 was assumed for cod-fillet - one of the most popular assortments of fish in Poland) effective from 1 January 1980.

Assortment	Retail price in zloties per 1 kg.	Indices Cod Fillet = 1.0
I. Fresh and frozen round fish:		
Baltic herring(large)	12-16	0.48 - 0.64
Mackerel	10-12	0.40 - 0.48
Baltic flat fish	8	0.32
Cod	8	0.32
Pilchard	15	0.60
II. Dressed fish:		
Baltic herring (large)	22	0.88
Mackerel	16-18	0.64 - 0.72
Cod	14	0.56
Halibut	30	1.20
Halibut (second grade)	18	0.72
Ocean Perch	20	0.80
Hake	14	0.56
Jack-mackerel	12	0.48
Sole	35	1.40
Tuna fish (gutted only)	30	1.20
Kergulene	50	2.00
III. Skinned fillets:		
Cod	25	1.00
Mackerel(unskinned)	50	0.80
Halibut	34	1.36
Ocean Perch	32	1.28
Hake	30	1.20
Kergulene	78	3.12

Apart from frozen fillets sold by weight, individual portions of quick-frozen fillets mostly breaded packed in waxed boxes are becoming more popular. Here are exemplary prices of those fillets in 400 gram boxes.

Cod	13.50	zloties
Ocean Perch	16.20	"
Mackerel	11.30	"
Hake	15.50	"
Halibut	17.20	"

Apart from fillets, salted herring is highly regarded by Polish consumers. However, as the Polish fleet no longer fishes for herring in the North Sea (the best herring), there has been a drop in supplies to the market, these being replaced by salted Baltic herring of lower quality with the addition of spices or enzymes when salting.

Prices for assortments of salted fish are as follows:

	Retail price in Zloties per 1 kg.
Baltic herring(headed,large)	22.-
Baltic herring(salted & spiced)	28.-
Atlantic herring (headed)	24.-
Mackerel (salted & spiced)	23.-

There are many assortments of canned fish and ready-to-serve dishes. Their price depends on the size and standard of packing and ingredients (vegetables, mushrooms, fruit, sauces, oils etc.). It would therefore be diffucult to give the price without a detailed description of the ingredients and production technology. The prices vary from 6.- zloties per tin to anywhere from ten to twenty

zloties, but does not usually exceed 14.- zloties.

Of the hundreds of assortments of canned fish manufactured by six large factories a few samples have been chosen:

Canned products	Weight in grams	Price in zloties
Mackerel fillets in oil	110	10.-
Herring fillets in oil	210	13.50
Sole in tomatoes	150	8.-
Mackerel in tomatoes	170	8.-
Pilchard in oil	210	11.80
Sprats in oil	150	9.50-13.-
Smoked herring in spiced oil	300	18.-
Herring with mushrooms	160	13.-
Herring in tomatoes	150	6.50

Price Relations between Fish and Meat Products

Fish is treated in Poland as a comparatively cheap food product although prices of some new fish products have increased. This results among other things from the lower production costs of fish in relation to other meat products. Costs of producing 1 kg net of edible protein from fish, poultry and meat amounted to 369.70, 402.30 and 478.60 zloties respectively, in 1977. Prices of fish products may be much lower than those of meat on the domestic market in view of the high subsidies. This is illustrated when comparing the prices of fish fillets 30-32 zloties per kg on average, with those of boned meat.

- pork chops, beef fillet 120.- zloties
- boned ham 84.- zloties
- boned beef 72-92.- zloties

Meat products such as sausage etc., cost from 100.- to 200.- zloties per kg. The following are some of the prices per 1 kg:

- smoked pork fillet	220.0 zloties
- smoked, boiled ham	180.- zloties
- smoked "kabanos" sausages	220.- zloties
- other kinds of sausages	from 100 to 180.- zloties
- smoked pork chops	150.- zloties
- smoked bacon	140.- zloties

Meat is sold by weight or prepacked, the prices of the latter being 8.- zloties per kg. higher on average. Prices of packed and sliced sausage are from 6.- to 20.- zloties per kg higher.

Prices of canned meat vary substantially depending on weight and type of product.
Prices per can are as follows:

- ham	455 g	110.-zloties
- ham	910 g	200.- zloties
- chopped pork	200 g	20.- zloties
- beef in natural juices	300 g	33.- zloties
- pork knuckle	910 g	110.- zloties

Prices for 1 kg of canned meat are much higher similarly to the case of fish fillets or dressed fish.

2.8 Fish Trade Organization in Poland

"Centrala Rybna" Producing and Trading Company is the basic link of the domestic fish trade. It supplies the domestic market with fish and fish products. "Centrala Rybna" is a specialized wholesale organization, which also retails fish and fish products (mostly ready-to-serve dishes made in its town plants) through its

own outlets. The company comes under the Fisheries Central Board.

There are two other trading organizations retailing fish, which do not come under the Fisheries Central Board and whose operation covers the whole of the domestic trade in food products. These organizations are:

- "Spolem" Central Union of Consumers" Co-operatives operating in towns, trading in food products and other articles of everyday use, also running catering production and services;
- "Samopomoc Chlopska" Central Union of Agricultural Co-operatives operating in rural areas and having the same range of activities as "Spolem".

These organizations are institutionally affiliated to the Ministry of Internal Trade and Services.

"Centrala Rybna" as a wholesaler picks up and delivers fish from seaports.

The following companies integrally affiliated to the state and co-operative fishery industries supply fish to "Centrala Rybna":

1. Fishery enterprises which supply frozen, salted, smoked, pickled and canned fish;
2. "Zaklady Rybne" fish enterprises which supply canned, pickled and smoked fish;
3. "Transocean", which supply fillets, frozen and salted fish as well as by-products previously purchased from fishery enterprises;

4. Sea Fishery-Co-operatives which supply fresh and frozen fish. as well as fish products from the seaports;

5. Others such as: State Farms and the Polish Anglers' Association supply fresh-water fish, private fishermen - freshwater and fresh Baltic fish, local processing plants - pickled and other products with a short shelf life.

Trade relations between the above mentioned enterprises are based on contracts for the supply of specified quantities of goods. The contracts give the delivery dates as well as rights and responsibilities of parties resulting from mutual trade relations.

Contracts between "Transocean" as the supplier and "Centrala Rybna" as the purchaser belong to the first group of contractual relationship. "Transocean" is state-owned enterprise engaged in:

1. The purchase of fish and fish products at sea and the loading of these onto auxiliary vessels. Purchase of fish ashore from state-owned and co-operative enterprises, as well as private fishermen. Purchase of fish imported through"Rybex" and other Foreign Trade Offices;

2. Sales of fish and fish products to domestic buyers through "Centrala Rybna" and to foreign buyers through Foreign Trade Offices and "Rybex";

3. Stocking up reserves of products and raw materials in cold storage plants hired from fishery enterprises as well as other state-owned companies;

4. Transport and forwarding services for fishery enterprises.

Under the contracts between "Transocean" and "Centrala Rybna" the supplier is to deliver a given quantity of products according to specifications of basic species of fish, and their assortments with the required quality grades.

The buyer should check quality of products immediately upon receipt.

Sale of products is on an F.O.B. plant basis, the seller liable for damage in transit only if this is the result being of fault on his part.

The seller has right to verify a claim. In causes of dispute an expert's opinion is conclusive. Similar rules govern relations between fishery or processing enterprises which draw up contracts with "Centrala Rybna" for direct deliveries of salt-water fish and fish products.

By direct delivery is meant delivery of products ordered, to the buyer by and at the expense of the supplier.

Wholesale Trade

"Centrala Rybna" is the sole supplier of wholesale and retail sales of fish in Poland.

Besides purchasing fish and fish products,the company responsibilities include:

- the delivery of wholesale supplies to its own retail stores and those belonging to other trade organizations;
- wholesale supplies of raw materials to fish processing plants;

- the stocking up of reserves to ensure regular supplies of products and raw materials to retail stores and processing plants;
- the organizing of sales of surplus stocks in other regions of the country.

"Centrala Rybna's wholesale trade is based on binding plans as well as purchase-sales contracts. "Centrala Rybna" covers delivery costs. Fish and products undergo constant quality inspection during handling, transport and storage.

"Centrala Rybna" has also its own system of quality inspection. Quality of products is based upon state quality standards or those issued by the Fisheries Central Board.

"Centrala Rybna" has its own facilities connected with the wholesale trade:

- unloading and loading ramps and handling sheds;
- special lorries for the transport of goods to consignees.

Every "Centrala Rybna" enterprise has its own warehouse in one of the towns of its region.

The warehouses have the following kinds of stores which stock all kinds of fish and fish products:

- cold storage plants and freezer chambers with a temperature of - 23°C;
- refrigerated stores for wet fish with temperatures ranging from 0° to 4°C;
- water tanks for live fish;
- stores for salted fish;
- stores for smoked and pickled fish
- stores for canned fish.

Central warehouses handle such jobs as sorting and packing of fish products.

The central warehouses also use the cold storage facilities of other state-owned and co-operative enterprises for accumulating the necessary reserves of raw materials and products.

Retail Trade

Fish and fish products are retailed in about 17,000 points throughout the country, which are supplied directly by "Centrala Rybna" warehouses.

These are:

- 755 specialized fishmongers managed by "Centrala Rybna";
- 555 specialized fishmongers managed by other trade organizations;
- 2,300 restaurants managed by "Centrala Rybna" and other trading organizations;
- 13,500 general stores where fish is sold.

Fish supplies are distributed through the following channels:

- fishmongers - 44%
- general stores - 50%
- catering establishments - 6%

Fish retail trade is a specialized one and thus most of the shops are located in densely populated urban areas. This specialization is restricted in rural areas, due to the great dispersion of customers, but this does not mean that people from rural areas cannot purchase fish. They can do so in the nearest town.

Some of fish products are sold in general stores in rural areas.

The relatively small number of shops in the "Centrala Rybna" network has a large share in sales. Moreover, as a specialized network it offers the full range of fish products.

"Centrala Rybna" has the following kinds of retail outlets:

- self-service fish stores;
- traditional fishmongers;
- ,fish shops with eating facility;
- permanent and seasonal fish restaurants or eating facilities;
- other outlets and forms of sale.

Stores managed by other trading organizations operate similarly to those of "Centrala Rybna", their turnover is smaller, their refrigerating equipment is less efficient and they are smaller. This limits the variety of fish and fish products they are able to offer.

Such organizations are reluctant to assign their shops for the sale of fish and fish products only, as this requires expensive equipment and skilled salesmen.

General stores selling fish products are divided into two groups, depending on the sales and refrigerating facilities available:

- the first adapted to sell fish and fish products i.e. having suitable refrigerating equipment;
- the second unsuitable for the sale of these goods.

In general, 75% of the general stores belong to the second group.

3. ESTIMATED MARKET SUPPLY IN POLAND UP TO 1985

3.1 Estimated Production

The outline of the development of the fishery industry in Poland up to 1985 worked out in 1967 assumed the extraction of 1.0 million metric tons of fish, live weight, in the final year. These plans were corrected after 1975. It is assumed that 732.0 thousand and 833.0 thousand metric tons of fish will be caught in 1980 and 1985 respectively.

Taking the catches assumed for the period 1980 - 1985, the following production may be attained:

	1980 thousands of metric tons	1985 thousands of metric tons
- Products for direct human consumption	280.0	328.0
- Subsidiary products (fish meal & oil)	58.0	59.0
Total production:	338.0	387.0

Of the products for direct human consumption there will probably be a drop in the production of wet and frozen fish, with an increase in that of fillets and other fish products (smoked, canned and pickled fish, and ready-to-serve dishes.)

Some butchers, delicatessen, specialized and non-specialized food stores also retail selected fish products.

The domestic market includes restaurants which come under retail trade.

"Centrala Rybna" has also its own catering establishments:

- fish restaurants;
- fish bars.

Fish restaurants are intended to advertise fish dishes and it is not planned to expand them. On the other hand, the state fish industry intends to develop the network of fish bars through "Centrala Rybna". Such bars, to seat 50 - 60 have already been opened in some regions and their number is to be increased gradually.

In order to increase sales of fish and fish products through catering establishments, the fish industry plans to increase the production of ready-to-serve dishes for them.

By-products(including mainly fish meal) will be maintained on the same level.

Production will be mostly directed to the domestic market, and only small quantities will be exported.

	1980 thousands of metric tons	1985 thousands of metric tons
Total production -	338.0	387.0
Of which:		
- domestic market	260.0	294.0
- export	43.0	49.0

3.2 Market Supplies up to 1985

The traditional product on the Polish market is salted herring. Before overfishing of the North Sea herring, the development plants envisaged the supply of 110 thousand metric tons a year by 1985. Cod and similar fish products especially fillets, smoked fish and minced fish used as ready-to-serve dishes are the second kind of fish preferred

by consumers. Canned or smoked mackerel and sprat, as well as ocean perch and all species of flat fish are also very popular in Poland.

Table 7 shows the planned supplies of particular groups of products up to 1985.

The demand for fish and products in 1985 should increase, assuming the present population growth trend in our country. Changes of market supplies refer not only to increased quantities, but also assortment composition.

Taking into account the composition of market supplies in the last few years, one can assume a noticeable shift in consumer preferences towards highly processed fish products such as fillets, smoked, canned and pickled fish and especially ready-to-serve dishes.

TABLE 7

PLANNED MARKET SUPPLIES UP TO 1985

(IN THOUSANDS METRIC TONS)

Products	1970	1975	1978	1980	1985
Total supplies	187.9	223.7	239.6	260.0	294.0
Fresh and frozen sea fish	43.3	31.4	60.9	60.0	55.1
Fillets	16.9	27.3	15.9	20.0	24.0
Salted fish	37.2	35.7	25.8	20.0	20.0
Smoked fish	29.4	33.4	31.7	38.5	39.0
Canned fish	25.9	45.4	48.7	52.4	54.4
Pickled fish	14.6	23.8	22.9	31.1	36.0
Ready-to-serve dishes	4.7	6.9	10.6	12.0	25.5
Fresh water fish	15.9	19.9	23.0	26.0	40.0

The quantity of semi-products and ready-to-serve dishes will be increased to meet the growing consumer demands, which have been taken into account in the plans up to 1985.

It should be noted that products to be supplied in 1985 will be more highly processed, thus there will be less waste.

The drop in salted fish(mainly herring) supplies in 1970-1978 will worsen in the years 1980-1985.

3.3 Prospects for Canadian Exports to Poland

As can be seen, the fish products for which there is a demand in Poland are mainly: frozen fillets (especially cod and similar fish), salted herrings and some types of canned fish. These could possible be imported to Poland from Canada on fulfilment of the following conditions.

In principal, the draft plan for the years 1981 - 1985 stipulates cuts in fish imports and the market supplies to be based mainly on own landings. The State's policy in this matter will, however, be flexible, based on the economical profitability of own catches as compared with imports. This policy is conducted by the Fisheries Central Board on behalf of the State.

Anticipated alternative profitability calculations of supplies from Polish landings or imports of fish for the years 1981-85 have not, as yet, been marked out. This is a very complicated matter. It is well known that the costs of fishing differ in the various fishing grounds. In any case, fishing costs alone would be insufficient for Poland to determine its policy as to what quantities of which products could be imported in the years 1981-1985. Information on the envisaged prices of products offered by Newfoundland suppliers would be needed for this purpose.

Information would be needed on at least two price versions,

namely:

- delivery of specified final products in the normal manner F.O.B. St. John's or C.I.F. Polish ports;

- delivery of fresh round fish at sea, from Canadian catchers on to Polish factory trawlers for further processing and freezing.

Should the Polish party be afforded official (even approximate) data concerning prices and quantities, it would be possible to work out the most advantageous forms of co-operation for both parties. It would then also be possible to determine the quantity of fish exports from the Canadian Economic Zone to Poland.

It should be mentioned that the State holds the monopoly in foreign trade in Poland.*

"Rybex" Foreign Trade Office
ul. Odrowaza 1
71-420 Szczecin, Poland

is authorized to import and export fish and enter into joint ventures. This enterprise is not, however, fully independent, but carries out the import-export policies set by the Fisheries Central Board of the following address:

Fisheries Central Board
ul. Odrowaza 1
71-420 Szczecin, Poland

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* The Fishing Industry Advisory Board has been informed that RYBEX does not normally deal with individual exporting firms. They prefer to keep their contacts at Government level.

Each year the Fisheries Central Board works out plans for "Rybex" stating the quantity of fish it can import and maximum funds at its disposal.

Import contracts with different suppliers from various countries are negotiated by "Rybex" itself.

Guide-lines concerning fish imports and exports are determined on the basis of an alternative economic calculation taking into account the state currency facilities available. No import duties are imposed on fish imported to Poland through "Rybex". The quality and health certificates specified in contracts are, however, required.

Appendix 1

POLISH FISHING FLEET - NUMBER OF VESSELS AND TOTAL TONNAGE BY SIZE /GRT/ AND TYPE

FOR YEARS: 1970 - 1978

thousand GRT

Type of vessel	1970		1971		1972		1973		1974		1975		1976		1977		1978		1979	
	number	thousand GRT	number	thousand GRT	number	thousand GRT	number	thousand GRT	number	thousand GRT	number	thousand GRT	number	thousand GRT	number	thousand GRT	number	thousand GRT	number	thousand GRT
DEEP-SEA FISHING VESSELS:	149	182.5	140	178.1	133	184.3	131	189.8	130	196.1	130	201.6	139	226.4	129	241.4	120	235.5	117	233.1
Drifter trawlers B-11, B-17	25	4.5	12	2.2	2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Side - trawlers B-10, B-14	53	34.6	52	33.9	49	32.6	43	28.6	38	25.3	35	23.4	33	22.0	11	7.2	2	1.3	1	0.7
Fishing - trawlers B-20	14	11.1	14	11.1	14	11.1	14	11.1	14	11.1	14	11.1	14	11.1	14	11.1	14	11.1	13	10.3
Factory - trawler B-15	21	59.1	21	53.6	21	51.6	21	49.6	21	48.6	21	48.6	21	48.6	21	48.6	21	48.6	21	48.6
Refrigerating trawler B-23	11	15.1	11	12.5	11	12.5	11	12.1	11	12.1	11	12.1	11	11.0	11	11.0	11	11.0	10	10.0
Factory - trawler B-18	9	27.9	9	22.4	9	22.4	9	22.4	9	22.4	9	22.4	9	22.4	9	22.4	9	22.4	9	22.4
Factory - trawler B-22	5	13.9	6	16.1	8	21.5	8	21.5	8	21.5	8	21.5	8	21.5	8	21.5	8	21.5	8	21.5
Factory - trawler B-29	11	16.3	11	16.3	15	22.2	18	26.8	18	26.8	18	26.8	18	26.8	18	26.8	18	26.8	18	26.8
Factory - trawler B-418	-	-	4	10.0	4	10.0	6	15.0	6	15.0	7	17.4	9	22.3	14	34.5	14	34.5	14	34.5
Factory - trawler B-414	-	-	-	-	-	-	-	-	-	-	1	2.6	4	10.4	7	18.2	7	18.2	7	18.2
Factory - trawler B-419	-	-	-	-	-	-	1	2.7	5	13.3	5	13.3	5	13.3	5	13.3	5	13.3	5	13.3
Factory - trawler B-417	-	-	-	-	-	-	-	-	-	-	1	2.4	6	14.4	9	21.6	9	21.6	9	21.6
Factory - trawler B-89	-	-	-	-	-	-	-	-	-	-	-	-	1	2.6	2	5.2	2	5.2	2	5.2
SUBSIDIARY and TRANSPORTING VESSELS:	4	39.2	4	39.2	8	56.8	7	48.5	7	48.5	8	56.3	10	72.2	10	72.2	9	69.0	9	69.0
Factory - mother -ship B-67 /"Gryf Pomorski", "Pomorze"/	2	27.7	2	27.7	2	27.7	2	27.7	2	27.7	2	27.7	2	27.2	2	27.7	2	27.7	2	27.7
Factory - mother - ship /"Kaszuby"/	1	8.3	1	8.3	1	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish - carrier /"Piast"/	1	3.2	1	3.2	1	3.2	1	3.2	1	3.2	1	3.2	1	3.2	1	3.2	-	-	-	-
Refrigerating - fish - carrier B-433 /"Halniak", "Lewanter", "Buran"/	-	-	-	-	3	15.8	3	15.8	3	15.8	3	15.8	3	15.4	3	15.4	3	15.4	3	15.4
Refrigerating- fish- carrier /"Harmattan"/	-	-	-	-	1	1.8	1	1.8	1	1.8	1	1.8	1	1.7	1	1.7	1	1.7	1	1.7
Refrigerating- fish- carrier B-68 /"Żuławy", "Wineta", "Kaszuby"/	-	-	-	-	-	-	-	-	-	-	1	7.8	3	24.2	3	24.2	3	24.2	3	24.2
BALTIC - small trawlers owned by:	645	25.8	524	25.1	532	26.0	537	27.1	522	27.5	498	27.5	496	28.2	500	29.0	501	30.0	456	30.6
Government enterprises	226	15.1	226	15.1	232	15.8	242	17.1	240	17.7	238	18.3	235	18.5	232	18.9	227	19.5	225	20.1
Fishery Cooperatives	143	6.5	116	5.6	116	5.6	115	5.6	115	5.6	114	5.5	115	5.8	115	5.9	117	6.0	114	6.0
Individual Fisherman	276	4.2	182	4.4	184	4.6	180	4.4	167	4.2	146	3.7	146	3.9	153	4.2	157	4.5	117	4.5
TOTAL	698	247.5	668	242.4	673	267.1	675	265.4	659	272.1	636	285.4	645	326.8	639	342.6	630	334.5	582	332.7

Appendix 2

POLISH FISHING FLEET - NUMBER OF VESSELS AND TOTAL ENGINE POWER /HP/ BY TYPE FOR YEARS: 1970 - 1978

in thousand HP

Type of vessel	1970		1971		1972		1973		1974		1975		1976		1977		1978		1979	
	number	HP	number	HP	number	HP	number	HP	number	HP	number	HP	number	HP	number	HP	number	HP	number	HP
DEEP-SEA FISHING VESSELS	149	201.5	140	210.9	133	220.9	131	232.0	130	242.1	130	249.9	139	287.8	129	312.4	120	303.1	117	299.3
Drifter-trawlers B-11, B-17	25	7.7	12	3.8	2	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Side-trawlers B-10, B-14	53	46.2	52	46.1	49	43.9	43	38.5	38	34.2	35	31.2	33	29.5	11	10.9	2	1.6	1	0.8
Fishing trawler B-20	14	19.3	14	19.3	14	19.3	14	19.3	14	19.3	14	19.3	14	19.3	14	19.3	14	19.3	13	17.9
Factory trawler B-15	21	50.4	21	50.4	21	50.4	21	50.4	21	50.4	21	50.4	21	50.4	21	50.4	21	50.4	21	50.4
Refrigerating trawler B-23	11	17.8	11	17.8	11	17.8	11	17.8	11	17.8	11	17.8	11	17.8	11	17.8	11	17.8	10	16.2
Factory trawler B-18	9	20.2	9	20.2	9	20.2	9	20.2	9	20.2	9	20.2	9	20.2	9	20.2	9	20.2	9	20.2
Factory trawler B-22	5	12.5	6	15.0	8	20.0	8	20.0	8	20.0	8	20.0	8	20.0	8	20.0	8	20.0	8	20.0
Factory trawler B-29	11	27.5	11	27.5	15	37.9	18	46.0	18	46.0	18	46.0	18	46.0	18	46.0	18	46.0	18	46.0
Factory trawler B-418	-	-	4	10.8	4	10.8	6	16.2	6	16.2	7	19.8	9	27.0	14	45.0	14	45.0	14	45.0
Factory trawler B-419	-	-	-	-	-	-	1	3.6	5	18.0	5	18.0	5	18.0	5	18.0	5	18.0	5	18.0
Factory trawler B-414	-	-	-	-	-	-	-	-	-	-	1	3.6	4	14.4	7	25.2	7	25.2	7	25.2
Factory trawler B-417	-	-	-	-	-	-	-	-	-	-	1	3.6	6	21.6	9	32.4	9	32.4	9	32.4
Factory trawler B-89	-	-	-	-	-	-	-	-	-	-	-	-	1	3.6	2	7.2	2	7.2	2	7.2
SUBSIDIARY and TRANSPORTING VESSELS	4	24.8	4	24.8	8	52.7	7	46.5	7	46.5	8	56.1	10	75.3	10	75.3	9	71.1	9	71.1
Factory-mother-ships B-67 /"Gryf Pomorski","Pomorze"/	2	14.4	2	14.4	2	14.4	2	14.4	2	14.4	2	14.4	2	14.4	2	14.4	2	14.4	2	14.4
Factory-mother-ship "Kaszuby"	1	6.2	1	6.2	1	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish carrier "Piast"	1	4.2	1	4.2	1	4.2	1	4.2	1	4.2	1	4.2	1	4.2	1	4.2	-	-	-	-
Refrigerating fish carrier B-433 /"Halniak","Lewanter","Buran"/	-	-	-	-	3	25.2	3	25.2	3	25.2	3	25.2	3	25.2	3	25.2	3	25.2	3	25.2
Refrigerating fish carrier "Harmattan"	-	-	-	-	1	2.7	1	2.7	1	2.7	1	2.7	1	2.7	1	2.7	1	2.7	1	2.7
Refrigerating fish carrier B-68 /"Żubrawy","Wineta","Kaszuby"/	-	-	-	-	-	-	-	-	-	-	1	9.6	3	28.8	3	28.8	3	28.8	3	28.8
BALTIC - small trawlers owned by:	545	73.8	524	72.7	532	76.0	537	79.5	522	82.8	498	85.3	496	90.7	500	96.8	501	104.8	456	109.4
Government enterprises	226	39.2	226	39.4	232	42.3	242	47.0	240	49.5	238	53.6	235	56.7	232	59.6	227	65.2	225	69.8
Fishery Cooperatives	143	18.7	116	16.4	116	16.4	115	16.2	115	17.1	114	17.4	115	19.5	115	20.9	117	23.2	114	23.2
Individual Fishermen	176	15.9	182	16.9	184	17.3	180	16.3	167	16.2	146	14.3	146	14.5	153	16.3	157	16.4	117	16.4
TOTAL	698	300.1	668	308.4	673	349.6	675	358.0	659	371.4	636	391.3	645	453.8	639	484.5	630	479.0	582	475.8

Appendix 3

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1970

Metric tons, round fresh, live-weight

Fish - species	Baltic 27	Atlantic, Northeast 27	Atlantic, Northwest 21	Atlantic, Eastern Central 34	Total all areas	Per cent of total
Freshwater fishes	3,372				3,372	0.7
European eel	418				418	0.1
Atlantic salmon	70				70	-
Greenland halibut		21,124	8,270		29,394	6.5
American plaice			418		418	0.1
Witch flounder			3,568		3,568	0.8
Flatfishes	3,962	16	516		4,494	1.0
Cod	68,440	8,047	49,730	1	126,218	28.0
Haddock			15	6	21	-
Hake			15	39	54	-
Ocean perch		5,326	5,846		11,172	2.5
Jack mackerel		1,192		8,111	9,303	2.1
Atlantic herring	46,018	10,289	71,909		128,216	28.4
Sprat	20,171				20,171	4.5
Mackerel		6,259	68,189	2,145	76,593	16.9
Other marine fish	4,196	4,757	7,878	20,979	37,810	8.4
T O T A L	146,647	57,010	216,354	31,281	451,292	100.0
Percentage by areas	32.5 %	12.6 %	48.0 %	6.9 %	100.0 %	

Appendix 3a

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1971

Metric tons, round fresh, live-weigl

Fish - species	Baltic 27	Atlantic, Northeast 27	Atlantic, Northwest 21	Atlantic, Eastern Central 34	Total all areas	Per cent of total
Freshwater fishes	4,282				4,282	0.9
European eel	377				377	0.1
Atlantic salmon	58				58	-
Greenland halibut		21,086	5,238		26,324	5.3
American plaice			604		604	0.1
Witch flounder			5,408		5,408	1.1
Flatfishes	4,094		682		4,776	1.0
Cod	54,151	2,603	29,466	6	86,226	17,3
Haddock		62	1		63	-
Saithe		6,139	3		6,142	1,2
Hake			148	38	186	-
Roundnose grenadier			105		105	-
Ocean perch		2,861	8,447		11,308	2.3
Jack mackerel		627	27	9,861	10,515	2.1
Atlantic herring	43,022	4,867	88,328		136,217	27.3
European pilchard		315			315	0.1
Sprat	31,855				31,855	6.3
Mackerel		10,963	112,296	3,099	126,358	25.3
Other marine fish	6,383	3,788	18,829	19,070	48,070	9.6
T O T A L	144,222	53,311	269,582	32,074	499,189	100.0
Percentage by areas	28.9 %	10.7 %	54.0 %	6.4 %	100.0 %	

Appendix 4

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1972

Metric tons, round fresh, live-weight

Fish - species	Baltic 27	Atlantic, Northeast 27	Atlantic, Northwest 21	Atlantic, Eastern Central 34	Atlantic, Southeast 47	Atlantic, Western Central 31	Pacific, Southeast 87	Total all areas	Per cent of total
Freshwater fishes	5,052							5,052	1.0
European eel	320							320	0.1
Atlantic salmon	87							87	-
Greenland halibut		15,859	7,122					22,981	4.4
American plaice		2	3,374					3,376	0.6
Witch flounder		5	4,017					4,022	0.8
Flatfishes	4,940							4,940	0.9
Cod	56,746	2,180	42,256					101,182	19.2
Haddock		1,471	1					1,472	0.3
Saithe		1,453	8					1,461	0.3
Hake			16	336	3,145		2,500	5,997	1.1
Roundnose grenadier		82	270					352	0.1
Ocean perch		1,611	3,286					4,897	0.9
Capelin			24					24	-
Jack mackerel		2,081	36	10,216	4			12,337	2.3
Atlantic herring	45,343	5,638	49,520					100,501	19.1
Round sardinella				1,486				1,486	0.3
European pilchard		847		1,350				2,197	0.4
Sprat	38,861	15						38,876	7.4
Mackerel		13,463	142,244	4,479	206			160,392	30.4
Squids			5,428					5,428	1.0
Other marine fish	6,830	6,755	9,509	22,064	686	64	1,415	49,378	9.4
TOTAL	158,239	53,462	267,100	39,931	4,041	64	3,915	526,758	100.0
percentage by areas	30.1 %	10.1 %	50.7 %	7.6 %	0.8 %	-	0.7 %	100.0 %	

Appendix 5

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1973

Metric tons, round fresh, live-weight

Fish - species	Baltic 27	Atlantic, Northeast 27	Atlantic, Northwest 21	Atlantic, Eastern Central 34	Atlantic, Southeast 47	Pacific, Northeast 67	Pacific, Southeast 87	Total all areas	Per cent of total
Freshwater fishes	4,500							4,500	0.8
European eel	225							225	-
Atlantic salmon	98							98	-
Greenland halibut		5,271	9,066					14,337	2.4
American plaice			1,381					1,381	0.2
Witch flounder		1	11,812					11,813	2.0
Flatfishes	4,278	257					11 11	4,546	0.8
Cod	49,790	3,110	28,800					81,700	13.7
Haddock		4,708	480					5,188	0.9
Saithe		12,081	23					12,104	2.0
Blue whiting		28						28	-
Hake		7	343	136	36,890	1,920	35,407	74,703	12.5
Roundnose grenadier		10	294					304	0.1
Ocean perch		496	5,199			8	4	5,703	1.0
Searobins		161	1,052	514	244			1,971	0.3
Capelin			3,417					3,417	0.6
Jack mackerel		3,921	491	7,957	8,467	9	35	20,880	3.5
Atlantic herring	51,213	13,233	50,307			58		114,611	19.3
Round sardinella				385	94			479	0.1
European pilchard		147		15,354				15,501	2.6
South African pilchard					30			30	-
Sprat	49,835	84						49,919	8.4
Mackerel		11,187	117,254	1,556	270			130,267	21.8
Squids		5	9,427	170	17			9,619	1.6
Other marine fish	582	2,076	15,685	8,272	3,856	491	1,086	31,998	5.4
T O T A L	160,521	56,783	255,031	34,344	49,868	2,436	36,539	595,522	100.0
Percentage by areas	27.0 %	9.5 %	42.8 %	5.8 %	8.4 %	0.4 %	6.1 %	100.0 %	.

Appendix 6

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1974

Metric tons, round fresh, live-weight

Fish - species	Baltic 27	Atlantic, Northeast 27	Atlantic, Northwest 21	Atlantic, Eastern Central 34	Atlantic, Southeast 47	Pacific, Northeast 67	Pacific, Eastern Central 77	Pacific, Southeast 87	Total all areas	Per cent of total
Freshwater fishes	5,028								5,028	0,7
European eel	272								272	-
Atlantic salmon	119								119	-
Greenland halibut		6,688	7,105						13,793	1,9
American plaice			706						706	0,1
Witch flounder			6,202						6,202	0,9
Flatfishes	4,668	456							5,124	0,7
Cod	48,650	15,190	33,749			93			97,682	13,5
Haddock		6,971							6,971	1,0
Seithe		26,775	4						26,779	3,7
Blue whiting		341							341	0,1
Hake		13	140	9	32,341	44,354		63,908	140,765	19,5
Roundnose grenadier		19	181						200	-
Ocean perch		1,293	4,865			120			6,278	0,9
Searobins		14	542						556	0,1
Capelin			9,476						9,476	1,3
Jack mackerel		5,850	11	4,610	13,520		34	21	24,046	3,3
Atlantic herring	55,957	17,173	39,513						112,643	15,6
Round sardinelle				98	59		94		251	-
European pilchard		263		23,685	10,188				34,156	4,7
Sprat	61,969	58							62,027	8,6
Mackerel		26,925	96,104	2,166	768				125,963	17,5
Squids			6,709	2	36				6,747	0,9
Other marine fish	5,073	8,967	9,835	6,043	4,869	84		811	35,682	5,0
T O T A L	181,736	117,016	215,142	36,613	61,781	44,651	128	64,740	721,807	100,0
Percentage by areas	25,2 %	16,2 %	29,8 %	5,1 %	8,5 %	6,2 %	-	9,0 %	100,0 %	

Appendix 7

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1975

Metric tons, round fresh, live-weight

Fish - species	Baltic 27	Atlantic, Northeast 27	Atlantic, Northwest 21	Atlantic, Eastern Central 34	Atlantic, Southeast 47	Atlantic, Western Central 31	Pacific, Northeast 67	Pacific, Eastern Central 77	Pacific, Southeast 87	Total all areas	Per cent of total
Freshwater fishes	5,375									5,375	0,7
European eel	276									276	-
Atlantic salmon	88									88	-
Greenland halibut		4,717	8,447							13,164	1.6
American plaice		100	632							732	0.1
Witch flounder		1	4,583							4,584	0.6
Flatfishes	5,139									5,139	0.6
Cod	69,318	10,963	16,384				786			97,451	11.9
Haddock		3,129								3,129	0.4
Seithe		40,221	17							40,238	4.9
Blue whiting		4,704								4,704	0.6
Hake		48	384	8	37,126	9	34,456	22,790	39,032	133,853	16.4
Roundnose grenadier		6	1,499							1,505	0.2
Ocean perch		4,987	4,470				15,444	1,203		26,104	3.2
Searobins			852							852	0.1
Capelin		1,544	24,875							26,419	3.2
Jack mackerel		2,348		5,935	28,610		3,056	680		40,629	5.0
Atlantic herring	68,533	10,515	38,463				1,138	250		118,899	14.6
Round sardinelle				1,411						1,411	0,2
European pilchard		198		76,720		2,906				79,824	9.8
South African pilchard					8,970					8,970	1.1
Sprat	62,445	9,513								71,958	8.8
Mackerel		23,886	74,281	1,677	801				7	100,652	12.3
Squids			6,836		28					6,864	0.8
Other marine fish	2,491	3,152	5,924	6,539	694	47	3,858	911	252	23,868	2.9
T O T A L	213,665	120,032	187,647	92,290	76,229	2,962	58,738	25,834	39,291	816,688	100,0
Percentage by areas	26.2 %	14.7 %	23.0 %	11.3 %	9.3 %	0.4 %	7.2 %	3.1 %	4.8 %	100.0 %	

Appendix 8

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1976

Metric tons, round fresh, live-weight

Fish - species	Baltic	Atlantic, Northeast	Atlantic, Northwest	Atlantic, Eastern Central	Atlantic, Southeast	Atlantic, Antarctic	Atlantic, Southwest	Pacific, Northeast	Pacific, Eastern Central	Pacific, Southeast	Total all areas	Per cent of total
	27	27	21	34	47	48	41	67				
Freshwater fishes	4,181										4,181	0.5
European eel	300										300	-
Atlantic salmon	103										103	-
Greenland halibut		3,566	5,942								9,508	1.2
American plaice		210	138								348	-
Witch flounder		34	4, 029								4,063	0.5
Flatfishes	4,394	5									4,399	0.6
Cod	70,466	10,501	20,403					8			101,378	13.1
Haddock		2,589									2,589	0.3
Saithe		40,124	25								40,149	5.2
Blue whiting		11,475									11,475	1.5
Hake		21	215	71	58,267			25,352	1,070	47,137	132,133	17.0
Roundnose grenadier		2	101								103	-
Ocean perch		4,139	4,061					4,335	23	23	12,558	1.6
Searobins			1,521								1,521	0.2
Capelin			15,121								15,121	1.9
Jack mackerel		3,026		10,689	43,551			747	118	601	58,732	7.6
Atlantic herring	63,850	10,564	10,539								84,953	10.9
Round sardinella				1,399							1,399	0.2
European pilchard		573		106,119							106,692	13.8
South African pilchard					2,279						2,279	0.3
Sprat	56,079	10,472									66,551	8.6
Mackerel		23,427	31,549	1,896	5,769				10	97	82,748	10.7
Antarctic krill						21	554				575	0.1
Squid			7,565		58						7,623	1.0
Other marine fish	925	3,804	4,279	9,238	3,102	-	25	272	1,016	2,176	24,837	3.2
T O T A L	200,298	124,532	125,486	129,412	113,026	21	579	30,714	2,237	50,011	776,318	100.0
Percentage by areas	25.8 %	16.0 %	16.1 %	16.7 %	14.6 %	-	0.1 %	4.0 %	0.3 %	6.4 %	100.0 %	

Appendix 9

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1977

Metric tons, round fresh, live-weight

Fish - species	Baltic	Atlantic, Northeast 27	Atlantic, Northwest 21	Atlantic, Eastern Central 34	Atlantic, Southeast 47	Atlantic, Antarctic 48	Indian Ocean, Antarctic 58	Atlantic, Southwest 41	Pacific, Northeast 67	Pacific, Southeast 87	Atlantic, Northwest Joint Venture with Nickerson	Total all areas	Per cent of total
Freshwater fishes	4,396											4,396	0.6
European eel	267											267	-
Atlantic salmon	80											80	-
Greenland halibut		224	6,006									6,230	0,9
American plaice		329	34									363	0.1
Witch flounder			3,117									3,117	0.4
Flatfishes	4,879											4,879	0.7
Cod	4,703	1,471	9,244						9		337	58,764	8.3
Haddock		490	6								7	503	0.1
Saithe		12,380	17								20	12,417	1.8
Blue whiting		6,539						2,057				8,596	1.2
Hake		2	32	11	35,525			284	22,186	59,771	282	118,093	16.6
Roundnose grenadier		11						16				27	-
Notothenids						7,735		2				7,737	1.1
Scotia icefish						1,340		37				1,377	0.2
Antarctic icefish						3,949	54	136				4,139	0.6
South Georgia icefish						6,343						6,343	0.9
Ocean perch		175	2,280						195		9	2,659	0.4
Searobins			546									546	0.1
Capelin			5,300									5,300	0.7
Jack mackerel		814		11,890	65,690				192	1,078		79,664	11.2
Atlantic herring	60,212	8	119								119	60,458	8.5
Round sardinella				39,364	188							39,552	5.6
European pilchard				136,113								136,113	19.2
South African pilchard					11,677							11,677	1.6
Sprat	50,502											50,502	7.1
Mackerel		2,546	17,186	1,430	4,216					596	2,509	28,483	4.0
Antarctic krill						6,966		2				6,968	1.0
Squids			3,827	4	70			3			3,012	6,916	1.0
Other marine fish	2,007	1,788	1,806	14,617	17,269	453	62	122	1,927	3,072	146	43,269	6.1
T O T A L	170,046	26,777	49,520	203,429	134,635	26,786	116	2,659	24,509	64,517	6,441	709,435	100,0
Percentage by areas	24.0 %	3.8 %	7.0 %	28.7 %	19.0 %	3.8 %	-	0.4 %	3.4 %	9.0 %	0.9 %	100,0 %	

Appendix 30

NOMINAL CATCHES OF POLISH FISHERY BY SPECIES AND AREAS FOR 1978

Metric tons, round fresh, live-weight

Fish - species	Baltic	Atlantic, Northeast	Atlantic, Northwest	Atlantic, Eastern Central	Atlantic, Southeast	Atlantic, Antarctic	Indian, Antarctic	Pacific, Antarctic	Atlantic, Southwest	Pacific, North-east	Pacific, South-east	Pacific, Western Central	Total all areas	Per cent of total
	27	27	21	34	47	48	58	88	41	67	87	71		
Freshwater fishes	4,206												4,206	0.6
European eel	271												271	-
Atlantic salmon	87												87	-
Greenland halibut		544	5,215										5,759	0.9
American plaice		28	159										187	-
Witch flounder			3,490										3,490	0.5
Flatfishes	5,418									13			5,431	0.8
Cod	64,113	681	4,517							14			69,325	10.6
Haddock		63											63	-
Seithe		5,696											5,696	0.9
Blue whiting		8,206											19,923	3.0
Hake					30,306				11,717	27,671	50,573		108,554	16.6
Roundnose grenadier		19	4										629	0.1
Notothenids			51						559				13,392	2.0
Scotia icefish						13,392							1,912	0.3
Antarctic icefish						1,912							48,462	7.4
South Georgia icefish						48,266	196						5,375	0.8
Ocean perch						5,375							3,807	0.6
Searobine		2,957	708							142			7,952	1.2
Capelin											7,952		12,401	1.9
Jack mackerel		10,863	1,538										157,103	24.0
Atlantic herring	63,850	61		4,872	122,572					188	25,288	4,122	63,850	9.7
Round Sardinella				40,539									40,539	6.2
European pilchard				2,633									2,633	0.4
South African pilchard					3,021								3,021	0.5
Sprat	28,574												28,574	4.4
Mackerel			2	42	2,285								11,294	1.7
Antarctic krill						1		36			7,910	1,055	37	-
Squids			1,944		104				4,366	1			6,415	1.0
Other marine fish	8,001	401	498	1,216	5,851	945	120	23	4,393	1,343	2,643	58	25,492	3.9
TOTAL	174,520	29,519	18,126	49,302	164,139	69,891	316	59	21,035	29,372	94,366	5,235	655,880	100.0
Percentage by areas	26.6 %	4.5 %	2.8 %	7.5 %	25.0 %	10.7 %	-	-	3.2 %	4.5 %	14.4 %	0.8 %	100.0 %	

Appendix 11

FISHERY FINAL PRODUCTS /OUTPUT/ IN POLAND FOR DOMESTIC MARKET AND EXPORT IN YEARS 1970 - 1978

Output in metric tons, product weight

	PRODUCT FORM	1970	1971	1972	1973	1974	1975	1976	1977	1978
I	FRESH AND FROZEN FISH	91,700	83,000	100,500	129,500	152,900	176,300	149,200	104,955	87,713
II	SALTED FISH	40,900	35,800	25,200	19,600	22,300	21,900	21,900	22,613	23,502
	- Herring	38,400	32,900	23,200	19,200	21,000	21,000	19,800	17,482	12,554
	- Mackerel	500	1,400	1,200	400	1,300	900	2,100	5,131	10,948
	- Other	2,000	1,500	800						
III	FILLETS	25,200	30,100	23,600	34,400	44,600	46,800	39,900	26,657	20,976
	- fresh	1,400	1,400	1,600	1,600	1,600	1,700	1,600	2,000	2,000
	- frozen:	23,800	28,700	22,000	32,800	43,000	45,100	38,300	24,657	18,976
	Cod	17,000	11,100	12,000	11,800			32,600	18,657	2,000
	Ocean perch	2,500	2,600	700	1,100			1,300	1,000	1,210
	Other	4,300	15,000	9,300	19,900			4,400	5,000	15,766
IV	SMOKED FISH	24,800	30,700	40,800	39,400	40,600	33,400	33,700	32,619	31,396
	- Herring	6,000	4,900	5,000	5,000	5,000	5,000	4,100	3,000	1,836
	- Cod		5,000							5,477
	- Sprats		5,600							5,014
	- Other	18,800	15,200	35,800	34,400	35,600	28,400	29,600	29,619	19,069
V	CANNED FISH	29,400	32,300	35,400	37,700	39,400	45,400	46,900	38,629	47,927
	- in oil	10,500	13,300	16,200	15,600	20,100	25,300	22,500	20,229	26,293
	- in tomato	9,000	11,700	12,800	10,700	12,400	9,200	14,500	8,900	10,476
	- other	9,900	7,300	6,400	11,400	6,900	10,900	9,900	9,500	11,158
VI	PICKLED FISH	18,000	19,500	23,500	26,200	18,917	18,583	23,290	24,650	29,087
VII	READY - MADE - DISHES					6,046	7,594	8,407	7,936	13,820
TOTAL for human consumption		253,800	260,100	271,000	319,600	324,763	349,977	361,597	282,716	254,421
VIII	FISH MEAL	25,100	29,500	31,800	38,800	39,500	45,900	50,500	58,236	49,029
IX	FISH OILS	4,700	5,500	5,400	5,000	4,700	3,900	3,400	3,859	2,656
	OTHER PRODUCTS	6,800	42,000	9,400	11,100	9,800	10,000	8,200	8,722	7,608
X	GRAND TOTAL	290,400	337,100	317,600	374,500	378,763	409,777	423,697	353,536	313,714

Appendix 12

DOMESTIC MARKET FISH SUPPLY IN POLAND FOR YEARS: 1970 - 1978

in metric tons, product weight

Product form	1970	1971	1972	1973	1974	1975	1976	1977	1978
I. SEA FISH	43,340	42,792	40,550	42,458	36,867	31,432	44,640	48,733	60,943
- fresh		9,278	8,805	7,140	7,528	7,283	7,626	10,771	11,958
- frozen		33,514	31,745	35,318	29,339	24,149	37,014	37,962	48,985
II. INLAND WATER FISH	15,888	16,117	18,065	20,193	20,431	19,950	21,426	24,136	23,012
- carp						11,920		14,616	11,342
III. SALTED FISH	37,177	38,580	37,126	34,358	34,978	35,731	35,092	29,719	25,803
- herring								25,979	15,602
IV. FILLETS	16,879	13,086	15,639	16,840	22,536	27,194	24,874	19,887	15,911
V. SMOKED FISH	29,420	31,815	37,412	40,853	40,053	33,414	36,758	34,556	31,690
VI. CANNED FISH	25,853	29,996	32,602	39,407	42,920	45,354	53,015	52,736	48,692
VII. PICKLES	19,387	22,055	27,535	30,314	26,678	23,751	24,475	24,773	22,858
VIII. READY MADE DISHES					5,956	6,854	7,088	7,148	10,625
IX. CRUSTACEANS AND MOLLUSCS									
X. OTHER MARINE FISH				2	13	21	14	52	50
T O T A L	187,944	194,441	208,929	224,425	230,432	223,701	247,382	241,740	239,584

Appendix 13

PER CAPITA ANNUAL CONSUMPTION OF FISH PRODUCTS IN POLAND FOR YEARS: 1970 - 1978

in kilograms, product weight

Product form	1970	1971	1972	1973	1974	1975	1976	1977	1978
Fresh and frozen dressed fish	1.3	1.3	1.2	1.3	1.1	0.9	1.3	1.4	1.7
Inland water fish /fresh/	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7
Salted fish	1.1	1.2	1.1	1.0	1.0	1.0	1.0	0.9	0.7
Fillets	0.5	0.4	0.5	0.5	0.7	0.8	0.7	0.6	0.5
Smoked fish	0.9	1.0	1.1	1.2	1.2	1.0	1.1	1.0	0.9
Canned fish	1.0	0.9	1.1	1.2	1.2	1.3	1.5	1.5	1.4
Pickled fish	0.5	0.6	0.8	0.9	0.8	0.8	0.8	0.7	0.7
Ready made dishes					0.2	0.2	0.2	0.2	0.2
Other marine fish	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.6	0.5
T O T A L	6.3	6.4	6.8	7.2	7.3	7.2	7.7	7.6	7.3

Appendix 1.4

EXPORTS OF FISH FROM POLAND

Metric tons

DESTINATION:	1976		1977		1978	
	Tons	Per cent	Tons	Per cent	Tons	Per cen
TO CENTRALLY-PLANNED COUNTRIES						
- frozen fish /dressed/	2,328	61.5	16	0.9	-	-
- fillets	447	11.8	598	51.5	360	58.3
- canned fish	996	26.3	545	47.6	258	41.7
- other	11	0.4	-	-	-	-
T O T A L	3,782	100.0	1,159	100.0	618	100.0
TO EEC AND OTHER FREE MARKET COUNTRIES						
- frozen fish /dressed/	68,489	70,1	71,656	79.7	45,325	77.5
- fillets	20,647	21.1	11,784	13.1	4,915	8.4
- canned fish	1,051	1.1	1,403	1.6	399	0.7
- pickles	651	0.6	763	0.8	935	1.6
- inland-water fish	1,582	1.6	1,566	1.7	1,137	1.9
- other	5,352	5.5	2,754	3.1	5,776	9.9
T O T A L	97,732	100.0	89,926	100.0	58,487	100.0

Appendix 15

IMPORT OF FISH AND FISH-MEAL TO POLAND

Metric tons

DESTINATION:	1976		1977		1978	
	Tons	Per cent	Tons	Per cent	Tons	Per cent
FROM CENTRALLY-PLANED COUNTRIES						
- frozen fish /dressed/	12,052	60.0	742	14.2	-	-
- salted herring	3,117	15.5	1,988	38.0	-	-
- canned fish	4,710	23.4	2,294	43.8	1,171	69.4
- other	225	1.1	210	4.0	517	30,6
T O T A L	20,105	100.0	5,234	100.0	1,688	100.0
FROM EEC AND OTHER FREE MARKET COUNTRIES						
- frozen fish whole and dressed	12,007	8.7	21,266	13.5	40,452	18.6
- frozen fish dressed	7,273	5.3	11,582	7.3	22,203	10.3
- fillets	3,391	2.5	7,570	4.8	5,722	2.6
- salted herring	9,638	7.0	5,220	3.3	3,508	1.6
- canned fish	220	0.1	608	0.4	278	0.1
- fish-meal	102,987	74.9	109,819	69.5	142,621	65.6
- inland-water fish	241	0.2	87	.	958	0.4
- fish fry	392	0.3	19	.	675	0.3
- shell fish canned	750	0.5	493	0.3	194	0.1
- other	684	0.5	1,289	0.9	906	0.4
T O T A L	137,583	100.0	157,953	100.0	217,557	100.0